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Chairman Ajit Pai
CTO Eric Burger
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

March 30, 2019

Subject: *Ex-parte* Comments on Docket 16-239, RM-11828, RM-11708; Response to Prof. Theodore Rappaport's letter to FCC Officials of March 20, 2019; Request for ex-parte meeting.

Dear Chairman Pai, Mr. Burger, and FCC Officials:

I am writing again on behalf of the Board of Directors of the Amateur Radio Safety Foundation, Inc., this time in response to the letter sent to FCC officials by Professor Theodore Rappaport on March 20, this year. Professor Rappaport continues to lobby the FCC, Congress, the Press, and the Amateur Radio community to have the FCC declare certain digital modes illegal and remove them from the HF amateur bands. He directly charges the Winlink Global Radio Email system and ARSFI's Directors with impropriety, not fostering goodwill, conspiracy, fraud, improper pecuniary interests, corporate enrichment, intense radio interference, intent to obscure communications by encryption, operating a commercial service on amateur-allocated bands, fostering a danger to national security, even, outrageously, control of the FCC by "a tiny fringe of the hobby" (Winlink developers, users, sysops, and ARSFI).

The ARSFI Board of Directors encourages the FCC or Congress to fully investigate these matters. We look forward to offering our full cooperation and demonstrating our transparency and openness.

Request for an Ex-Parte Meeting

We formally request an ex-parte meeting with the Commission to defend our position and correct the record. Since Rappaport was allowed an ex-parte meeting in the summer of

2016 with OET and WTB, where he claimed incorrect technical assertions about the Winlink system and its participants, and given the close association he enjoys with certain Commission officials, Commissioners, and employees, it is fair that our organization be given an opportunity to debunk his assertions in person. We request an audience with the Chairman, and his CTO, Eric Burger. We would like to have other federal agencies invited who have offered to provide a briefing and provide their opinions. We would also like to have the ARRL represented, and Professor Rappaport as well.

The troubling result of this combative and untruthful public lobbying is the fracture of the US amateur radio community, and damage to the long-standing institution representing Amateur Radio in the USA (ARRL). Please grant our request to be heard. We hope it will end this contention, and to at last put the FCC in a position to act on long-pending proceedings.

On Winlink's Alleged Intent to Obscure Message Content and Lack of Transparency

Winlink and ARRL opponents led by Rappaport (for example, https://wireless-girl.com/ARRL_EntryLevelLicense.html?fbclid=lwAR1BtSzff5lg) base their arguments principally on the difficulty of a third party to eavesdrop and decode transmissions of Pactor, WINMOR, ARDOP, VARA and similar Automatic Repeat Request (ARQ) radio modes. They declare that these modes, and other difficult-to-eavesdrop ARQ modes are therefore illegal. FCC rules do not support this. §97.309(4) defines that Pactor 1, 2, 3, 4, WINMOR, ARDOP, VARA, and any other similar modes are legal and 'specified' modes on HF by virtue of their published technical specifications, listed below. Counter to opponent's arguments, they are legal because there is no rule that requires transmissions using them must be successfully eavesdropped by the average amateur operator.

http://www.wavecom.ch/content/ext/DecoderOnlineHelp/default.htm#!worddocuments/pactoriii.htm
http://www.arrl.org/pactor-iii
http://www.arrl.org/pactor-ii
http://www.arrl.org/pactor
https://www.sigidwiki.com/wiki/PACTOR_III
https://www.sigidwiki.com/wiki/PACTOR_IV
https://www.sigidwiki.com/wiki/PACTOR_II
https://www.sigidwiki.com/wiki/PACTOR_I
https://cartoonman.github.io/Shoc/pactorii.htm
http://f1ult.free.fr/DIGIMODES/MULTIPSK/PACTOR1_en.htm
https://www.p4dragon.com/download/PACTOR-2%20Protocol.pdf
https://www.p4dragon.com/download/PACTOR-3%20Protocol.pdf
https://www.p4dragon.com/download/PACTOR-4%20Protocol.pdf
http://www.arrl.org/files/file/WINMOR.pdf
VARA: https://mega.nz/#!OCoRwY4Q!BC3PqgZHFBPpOxlz4mFCZvis_XUMnIxxlnIjBSemZEc

(specification is a file within the documentation folder)
https://ardop.groups.io/g/users/files/ARDOP%20Specification.pdf

When SCS Pactor modems are used by Winlink-compatible software, SCS proprietary HUFFMAN and PSEUDO-MARKOV compressions (see https://www.p4dragon.com/download/PACTOR_Advanced_Data_Compression.pdf) are switched off to allow the modem to pass ASCII characters. Software applies LZH compression/decompression defined by the public B2F specification (See winlink.org/B2F). Winlink's open LZH compression source code is open-source, public and available at https://github.com/arsfi. For other modes, B2F protocol with LZH compression/decompression is similarly applied. Compression/decompression is used to facilitate efficient transmission times, not to obscure the content of messages.

These modes evolved to conform to past rules and they comply with them today. Rappaport and his followers should petition the FCC for specific rule changes, or new rules, not stir up public controversies using 'alternative facts' that have frozen the FCC's actions on these proceedings.

We are on record that on-air monitoring of ARQ modes is difficult, but not impossible. Professional-level decoding software is commercially available that will decode Pactor 1-4, for instance:

http://www.hoka.net/products/code300-32.html (purchase option 'm')
https://www.comintconsulting.com/krypto500
http://www.wavecom.ch/content/pdf/brochure_w-code.pdf
http://www.kd0cq.com/2013/07/sorcerer-decoder-download/f

Professional-level development skills and a thorough understanding of protocol details, how compression/decompression is applied, along with good radio path conditions are required for success. It is wholly impractical to expect the average amateur to be as successful as he might be eavesdropping on an SSB voice signal. Similarly, the average amateur today can not eavesdrop on fast CW signals without superior skills or software, yet this is not debated as 'effective encryption', simply because it it traditional and accepted in the community. There are many other examples to illustrate this.

Better, cheaper, error-free, and much more efficient than on-air eavesdropping is monitoring radio email content as it flows though the system. We suggest a modern outlook on monitoring for these valuable ARQ digital modes. Old notions of appropriate methods that work for traditional radio modes need to be put aside.

We agree wholeheartedly with the tradition and need of the amateur radio community to police itself. There is no intent to conceal or obscure Winlink communications, proven by the tools provided control operators for near-real-time message monitoring. Under FCC rules control operators, not the Winlink system and not ARSFI, are responsible for the content flowing through their stations. Winlink volunteer administrators also have access

to messages in plain text for regular review, and provide informative warning messages to users whenever improper operation becomes apparent. Winlink administrators provide full transparency by providing messages as evidence to government investigations and incidents when requested, the most recent being the USCG and NTSB investigations to the tragic sinking of the reproduction sailing ship Bounty. It is our published policy that there is no privacy in Winlink radio email messages (winlink.org/terms_conditions). All communications are logged in detail and messages are kept for a 21-day review period. Messages may be archived and made available to the FCC and others on request.

We are encouraged that Riley Hollingsworth has accepted the task to organize the new ARRL Volunteer Monitor program. When I learned this, I contacted Mr. Hollingsworth and offered access to Winlink's message base and monitoring tools. Our discussions are pending and we are delighted to augment our user self-monitoring activity with volunteer monitors not directly associated with Winlink. The FCC and ARRL officials are welcome anytime to the message base and monitoring tools on an ongoing basis. If the FCC determines that public access to the message base is required, we shall provide it.

On Airmail/Sailmail Being the Same as Winlink, and the Exploitation of the Amateur Radio Spectrum

Rappaport intentionally would have you believe that Sailmail and Winlink are the same system to aid your perception that the amateur spectrum is being illegally exploited. He incorrectly and boldly asserts that they, *"use the same software and networks to offer secure private email service to yacht owners on the backs of the amateur radio spectrum…"*

Winlink and ARSFI have no ties with the Sailmail Association, it's systems, or it's services other than sharing one of many client email programs (Airmail) and one method (Pactor) of HF radio transfer. Sailmail land and maritime stations are licensed in the maritime service. Servers and data infrastructure are different, not related, not shared, and not connected to Winlink's. A Sailmail subscriber does not use amateur radio frequencies. This is easily validated by contacting Sailmail principals (See sailmail.com).

On Winlink's "Tiny, Closed Software Development Community, Lack of Transparency and Open-Source Products"

Prof. Rappaport fails to inform you that roughly half of Winlink 23,400 user's stations use third-party and open-source software, not produced by the Winlink Development Team. The Development Team produces core products and administers the servers that provide a solid foundation and the dependability of the radio email system, while supporting an active third-party development community by sharing standards, technical specifications, direct technical assistance, and importantly, providing a totally public application programmer's interface (API) to the core of the system, Winlink's CMS or Common Mail Server. See it documented at api.winlink.org. The API enables any developer to access and interact with the Winlink system—in the open amateur radio

tradition. BPQ32, LinBPQ, Linux RMS Gateway, Pat, PiGate, Paclink UNIX, VARA, VARA-FM, and other projects are active and have produced programs and products used by amateurs today on the Winlink system, and spin-off technologies used independently of Winlink on the amateur bands—all very much in the spirit of amateur radio's "public policy," as Rappaport defines it. The Winlink Development Team's own open-source, open-protocol project is ARDOP or Amateur Radio Digital Open Protocol (ardop.groups.io), with over 1100 participants subscribed to it's email groups. Winlink's direct interfaces with APRS (called APRSLink), APRSIS, with HAMNET and other 44.x.x.x-based high-speed microwave and open packet radio networks worldwide, all contribute to, enrich and broaden the amateur radio experience. The 'maker' movement is also alive with Winlink-related projects, especially for Raspberry Pi computers (see PiGate.net as one example). These are all currently attracting new, younger amateurs to amateur radio, encouraging experimentation and development, and developing the technical pool of experts that §97.1 describes.

Rappaport's dark characterization of ARSFI and Winlink development as insular, private, and exclusive, not fostering goodwill, and not promoting openness is very disingenuous, and misleading. That ARSFI and Winlink *"is hampering the spirit and appeal of the amateur radio hobby to new entrants, especially youngsters who are vitally needed to improve the engineering and scientific capabilities of the US, and who are key to the economic future of our country"* is preposterous. Ask any ham who has actually used Winlink.

On Crime and Illegal Activities Conducted in the Amateur Radio Spectrum and on Winlink

Rappaport cites media reports of drug and human trafficking, business use, banking, bitcoin, the bootlegging of call signs on the high seas *"conducted in the amateur radio spectrum without other hams or the FCC being able to detect or act on the transmissions."* His examples include abuses of FT8/JS8Call, SSB voice and unlicensed operation by a yacht race skipper, and a report on Mexican drug cartel radio systems that mentions amateur radio nowhere. He does this to associate accusations that these things are happening within the *"closed"* and *"effectively encrypted"* system of Winlink radio email. A simple review of the messages contained in the Winlink message base will debunk this. Thousands of Winlink operators already monitor each other's messages sent through the system, licenses and callsigns of all users are verified both automatically and manually, and abusers (yes some try) are weeded out rapidly. We doubt any other subgroup in amateur radio self-regulates as well as Winlink users do. Please investigate this for yourselves. Please allow FCC enforcement to monitor Winlink messages directly.

We find it ironic that Rappaport cites the prohibited transmission of a bitcoin transaction (https://bitcoinist.com/bitcoin-sent-ham-radio/) and that it was transmitted by FT-8 (JS8Call software). This is the very protocol, and author that he praises for it's transparency, accessibility and whose development is led by a Nobel Laureate. Where is the outcry about this? How does the virtue of open-source software or easily monitored,

simple narrowband digital radio protocols mitigate such crime? It doesn't. These things are not related. Moreover, there is no organized oversight of FT-8 transmission content as there is with Winlink.

On ARSFI Finances

Rappaport states that *"17 individuals on the Winlink Team participate in a revenue stream approaching $100,000 per year…"* This is not accurate. ARSFI is transparent, as evidenced by the gold-seal information on Guidestar (https://www.guidestar.org/profile/20-5586920), and the Internal Revenue Service. ARSFI is a public-benefit corporation under Florida law, is a non-profit federal entity (503(c)(3), and has no shareholders. Our public filings show exactly where the money goes. ARSFI is accumulating an endowment for the future operation costs of the Winlink system. Regardless, it is not unusual or evil for any organization to make money from manufacturing hardware or software, whether for profit, or not-for-profit. There would be no amateur radio hobby or service as we know it without economic activity around it. The voluntary purchase of a $24 registration key (not *"required as an annual service subscription or software license,"* as Rappaport improperly states to you) has no effect on the functionality of our programs. Funds are given and expenses are paid to provide for the ongoing operation of the system and the objectives stated in our public statement of purpose. See arsfi.org.

FCC prohibitions of transmissions for the licensee's or control operator's pecuniary interests should not be confused with paying the bills of an organization. Rappaport's innuendo is shameful.

What Makes Winlink Commercial, and Illegal; Not Belonging on the Amateur Spectrum?

Is is because radio messages are in an email format and intercommunicate with internet email? These qualities are exactly why they have value as contingency communications when and where the internet becomes unavailable. Does the email format automatically require that a message must be sent by commercial services rather than by amateur radio? What about voice format? or text messaging? Must one use commercial telephone or wireless service if the format is voice? APRS, PSK31, and most all amateur narrowband digital modes must be deemed illegal if by virtue of their message format they must be transmitted using commercial text messaging services. Clearly, message format is not a criteria for the prohibition in §97.113(a)(5). This is absurd, of course, yet Rappaport argues this point.

Perhaps it is because the Winlink system is too *"commercial-like" (Rappaport's word)* with 99.99% uptime, error-free communications, and the ability to serve non-amateurs with third-party direct delivery of messages via email? FCC rules only pertain to amateur radio pathways, and do not apply after a message continues on it's journey via connected wireline services. Again, these qualities are what make it so valuable to function in place of lost commercial email services when and where the internet is down. It's unusual and

remarkable to find something like this in amateur radio, where a similar standard of reliability and such fast and seamless interoperability is available. It is also not a criteria for the prohibition in §97.113(a)(5).

On *"crowding the US HF amateur bands with unintelligible wideband data traffic and intense interference."*

NPRM 16-239 provides only for the removal of the obsolete 300 symbol/second rate in HF data signals. Though the FCC declined to add the ARRL's recommendation to replace it with a limitation of bandwidth (2.8 kHz), we are on record stating we feel the limitation is reasonable and practical. Most amateur transmitters are built with compatible SSB signal filtering. Further, if it becomes a rule, with a bandwidth limitation or not, Winlink "wideband" (2.4 kHz) traffic using modern HF modes is still confined to the narrow §97.221(b) subbands. Narrow-band modes may operate outside the subbands. How this *"crowds the US HF amateur bands…with intense interference"* is beyond logic. Yet this is another Rappaport fear argument bought by simple thinkers.

Conclusion

As we have said, the ARSFI board of Directors unanimously supports the Commission's proposal in Docket No. 16-239. We feel the ARRL's proposed bandwidth limit is also with merit. This will make this rule conform with ITU rules regarding bandwidth as a limiting specification.

Please discount the input of Theodore Rappaport and the many who echo his talking points fueled by emotional and fear arguments and false facts. Investigate the technical and factual inaccuracies he uses in his arguments. Please grant us equal time and an ex-parte meeting to answer your questions and debunk innacuracies.

I and the entire Board are at your service should any questions arise.

Sincerely,

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